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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/623,970

07/21/2003

Ulysses Gilchrist

390-011009-US (I01)

5343

2512

7590

10/17/2008

PERMAN & GREEN
425 POST ROAD
FAIRFIELD, CT 06824

EXAMINER

LOWE, MICHAEL S

ART UNIT

PAPER NUMBER

3652

MAIL DATE

DELIVERY MODE

10/17/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/623,970	Applicant(s) GILCHRIST ET AL.	
	Examiner Michael Scott Lowe	Art Unit 3652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,7-11,13-17,19,20,22,24-28 and 37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,7-11,13-17,19,20,22,24-28 and 37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Note: This is a supplemental action correcting some obvious typos and replaces the previously sent final rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1-5,7-11,13,37, are rejected under 35 U.S.C. 103(a) as being unpatentable over Mages (US 5,772,386) in view of Maydan (US 5,882,165).

Re claims 1, Mages teaches (particularly figure 1) a substrate processing apparatus having a station for loading and unloading substrates from the apparatus, the station comprising:

an aperture closure (generally 12,87) for sealing a loading and unloading aperture of the station;

apparatus (generally figures 1,4-8,etc.) for removing a door (generally 15) of a substrate magazine (generally 6,46) and thus opening the substrate magazine (generally 6) and for operating the aperture closure (generally 12) to open the aperture; and

an elevator (generally 5,56) for precisely positioning the open substrate magazine (generally 6) along a vertical axis within a usable range of motion.

Mages teaches a buffer transport (generally 5,7,53,54,55) for positioning one or more substrate magazines (generally 6) along a second axis (various) oriented in a second direction (various).

Mages teaches (generally figures 1,10,11) a shuttle (generally 5,7,53,54,55) for transporting the one or more magazines (generally 6) along a third axis (various) oriented in a third direction (various) different from the first and second directions and wherein the buffer transport is operative for moving the substrate magazine between a first position and a second position, wherein when in the first position the substrate magazine communicates with the aperture, and when in the second position the substrate magazine is offset from the first position and is buffered, and wherein the first and second positions are horizontally coplanar.

Mages (particularly see figure 1, etc.) does not teach buffering the magazines from a first to a second horizontally coplanar position adjacent the aperture while remaining on the magazine support. Maydan teaches magazines (generally 26,28) on a common magazine support (generally 24,30) that are buffered from a first to a second horizontally coplanar position adjacent the aperture while remaining on the magazine support in order to have a more compact device (summary of invention). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have tried modifying Mages by Maydan to have the magazines on a common magazine support and buffered from a first to a second horizontally coplanar position (providing another different direction of movement) adjacent the aperture while remaining on the

magazine support in order to achieve the predictable result of having a more compact and useful device.

Re claim 2, Mages as already modified teaches the elevator (generally 5) operates such that a substrate within the open magazine (generally 6) is positioned substantially in a wafer transport plane (generally 10), the substrate processing apparatus further comprising a transport apparatus (generally 22) for accessing the substrate in the wafer transport plane (generally 10) through the aperture.

Re claim 3, Mages as already modified teaches the elevator (generally 5) includes a device (generally 5,11) for positioning the open substrate magazine (generally 6) such that substantially no vertical movement is required by the transport apparatus.

Re claim 4, Mages as already modified teaches the first and second positions substantially coplanar with a plane that includes the second axis.

Re claim 5, Mages as already modified teaches at least one peripheral area and a central area (see figures, inherent also).

Re claim 7, Mages as already modified teaches the buffer transport (generally 5,7) is operable to place the one or more magazines (generally 6) in the at least one peripheral area (not numbered) and the central area (not numbered).

Re claim 8, Mages as already modified teaches the elevator (generally 5) is operable to move the one or more magazines (generally 6) placed in the central area.

Re claim 9, Mages as already modified teaches the station further comprises a sensor (generally 21) for mapping vertical locations of the substrates.

Re claim 10, Mages as already modified teaches the sensor (generally 21) is mounted to a frame (not numbered) of the station and capable of mapping the vertical location while the elevator is precisely positioning the open substrate magazine along the vertical axis.

Re claim 13, Mages as already modified teaches a mini-environment (not numbered, see figure 1, etc.) for interfacing the station to the substrate processing apparatus.

Re claim 37, Mages as already modified teaches more than one horizontally adjacent magazine supports (generally 7).

Re claim 11, Mages teaches the sensor (generally 21) but is silent as to its mounting. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have tried modifying the sensor mounting to have the sensor mounted in any equivalent known fashion and to any part of the device as long as it still could perform its function for the predictable result of improving aesthetics and spacing. There are only finite number of places and ways for this to happen and work and would be apparent to one of ordinary skill to recognize this and the usefulness of its predictable results. Furthermore, on page 14, lines 17-19, applicant supports this rejection by stating "sensor 245 may be mounted in any orientation at any location so long as sensor 245 is capable of scanning substrates present inside magazine".

Claims 1,9,11,14-17,19,20,22, 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mages (US 5,772,386) in view of Gordon (US 6,013,920).

Re claims 1,9,11,14,24,16, Mages teaches a substrate processing apparatus having a station for loading and unloading substrates from the apparatus, the station comprising:
an aperture closure (generally 12) for sealing a loading and unloading aperture of the station;
apparatus (figures 1,4-8) for removing a door (generally 15) of a substrate magazine (generally 6) and thus opening the substrate magazine 6 and for operating the aperture closure (generally 12) to open the aperture; and
an elevator (generally 5) for precisely positioning the open substrate magazine (generally 6) along a vertical axis within a usable range of motion.

Mages teaches a sensor (generally 21), that is also an encoder, mounted on the elevator (generally 5) (through 3) for providing elevator vertical position information.

Mages teaches the sensor (generally 21) but is silent as to its mounting. Gordon teaches a sensor (generally 86), mounted to the magazine door drive (generally 42 (48)) for easily mapping vertical locations of the substrates (column 5, line 62 to column 6, line 9). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have tried modifying Mages by Gordon to have the sensor mounted to the magazine door drive for the predictable results of mapping vertical locations of the substrates and/or for aesthetic reasons and spacing. Mages teaches a magazine door drive (generally 12, 32 (or 94)) but does not state explicitly the type of drive (generally 32) other than it is a cylinder. Columns 6-7 Mages states that suitable drives or cylinders for moving doors and other items are pneumatic fluidic drives.

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Furthermore, cylinder drives are usually fluidic drives. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have tried modifying the drive be any known drive, such a fluidic pneumatic drive, in order to achieve the predictable result of saving the expense of developing a new type of drive and also having all the drives to be of the same type for ease of maintenance.

Re claim 15, Mages as modified by Gordon teaches a through-beam sensor.

Re claims 17,20, Mages as already modified teaches the sensor (generally 21) is mounted to a frame (not numbered) of the station and capable of mapping the vertical location while the elevator is precisely positioning the open substrate magazine along the vertical axis.

Re claim 19, Mages as already modified teaches the substrate locations are determined by recording the elevator vertical position information when the sensor (generally 21) detects an individual substrate.

Re claims 22, Mages as already modified teaches the substrate locations are determined by processing the magazine door drive position information when the sensor (generally 21) detects an individual substrate.

Re claim 25, Mages as already modified teaches a substrate buffer for temporary substrate storage.

Re claim 26, Mages as already modified teaches at least one peripheral area and a central area (see figures, inherent also).

Re claim 27, Mages as already modified teaches the buffer transport (generally 5,7) is operable to place the one or more magazines 6 in the at least one peripheral area (not numbered) and the central area (not numbered).

Re claim 28, Mages as already modified teaches a mini-environment (not numbered, see figure 1, etc.) for interfacing the station to the substrate processing apparatus.

Conclusion

Applicant's arguments filed 6/16/08 have been fully considered but they are not persuasive.

Another copy of the definition of "encoder" is attached to the office action to show again that an encoder does not mean a particular type of measuring device and is in fact a broad term.

Throughout the arguments applicant argues the references individually while the rejections are formed of a combination of references not just one reference or the other.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant argues that the combination of Mages and Maydan would not work and aside from attacking the references individually discounts the ability and knowledge of

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one of ordinary skill. Maydan shows horizontal coplanar movement as claimed and this would be apparent to one of ordinary skill that there is a predictable result arising from modifying Mages to have this further ability. One of ordinary skill would have no trouble modifying Mages to have this predictable improvement and there would be no need to pull all the other unneeded features of Maydan into the modified Mages. Again this obvious to try in light of the references, gives a predictable and useful result and is well within the ability of one of ordinary skill to do.

Applicant argued that the combination would not result in a more compact device, but figure 10 of Mages shows the space is there (also see figure 1 of Maydan) and this would be more compact form of a more versatile improved Mages device. Applicant's arguments about the increasing of size appear to be for a device different than the actual combination used and the actual resulting device is not as applicant describes.

Applicant argued that Mages does not teach the sensor mounted as claimed and it would not be obvious to combine the references to get the claimed invention. However, as stated in the rejection it would have been obvious to one of ordinary skill to mount the sensor in any location as long as it performs its function and as there a limited number of mountings that would achieve the references stated use and further the result is desirable and predictable, the Mages (column 5, lines 8-10) sensor (encoder) indexes (encodes) the magazine's content and thus the magazine. Relative locations/heights are found and thus the capability of knowing the relative height of the sensors. Furthermore, as the claims are apparatus claims they need only be capable of

the intended uses and as rejected meet the claims. Also it is noted that the sensor body is not the entire sensor, and the sensor can be understood to include the sensing beams as well which would further backup the fact that all the claim limitations are met. Applicant argues that his specification is misstated but the language amounts to the same thing. This is just mentioned that applicant's specification supports the understanding that particular the mounting and location of the sensor are things that one of ordinary skill would know well enough to achieve the claim limitations only, and is used to support the examiner's rejections, and as shown above are not what is relied on in making the modifications that are predictable and within the understanding and ability of one of ordinary skill.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Applicant argues that Gordon does not teach the claimed sensor. However, Gordon does show it is known to rotatably mounted (clearly shown in figure 8) and the sensor on the frame and extending the sensor into the FOUP. Mages teaches the

sensor (and encoder). Furthermore, Gordon and Mages share a common classification in both class and subclass and are thus of common interest for combination.

Applicant argued that Mages does not have an encoder on the lifting cylinders. However, this is not a limitation of the claims.

Applicant argued that Mages does not have an encoder. However, as stated the attached definition of an encoder, Mages' sensor 21 is an encoder and further the modification with Gordon has rotatably mounted sensor (and actually need not have just one sensor).

Applicant argued that Gordon does not teach the sensor extending into the FOUP. However, Gordon clearly states the sensors are in the FOUP in column 7, lines 42-45. Applicant's arguments that this would not work, does not change that Gordon does state that optical detectors 106 are at some point within the stack of wafers in the FOUP 22. Furthermore it is again noted that the sensor body is not the entire sensor, and the sensor can be understood to include the sensing beams (which certainly travel into the magazine) as well which would further backup the fact that all the claim limitations are met. The sensors are shown clearly to have a rotatable mount (figure 8) and that they extend as already explained above into the magazine in multiple ways and this clearly explained. Applicant appears to be arguing limitations which are not actually written in the current claims.

Applicant argues that Gordon only moves vertically but there is nowhere that states that Gordon "only" moves vertically. Gordon does have vertical movement but this is not the only movement present as mentioned above and as shown in the figures

previously mentioned. Applicant states the examiner is only taking part of what the references say but instead applicant is ignoring the parts of the reference he does not like. The fact is that Gordon states as mentioned before that the sensors are located at some point within the magazine (column 7, lines 42-45).

Applicant argues that Gordon does not rotate the sensors into the FOUP but this is not even in applicant's own claims.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., rotating the sensors into the FOUP) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant again argues the references do not have the encoders and the intended use as already addressed above and in previous arguments of other office actions, the term encoder is broad and is met by the references and the references are capable of the intended uses as well. Also as already address the references are used as a combination and the combination teaches the encoder and its claimed attributes and capabilities. Applicant argued that neither Mages nor Gordon teaches a fluidic door drive and that it would not have been obvious to add one since Gordon has a lead screw drive and associated sensor. Gordon teaches placing the sensor on the door drive, but Mages teaches the sensor and fluidic drives. As also stated before, the method of operating the encoder does not change that the location of sensor is

determined when the location of its support is determined, as the relative mounting location is not changed. If the encoder signals that support of the sensor is moved a distance then the sensor is also moved that distance. The combination thus meets all the actual limitations of the claims.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Scott Lowe whose telephone number is (571)272-6929. The examiner can normally be reached on 6:30am-4:30pm M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saul Rodriguez can be reached on (571)272-7097. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael Scott Lowe/
Examiner, Art Unit 3652